12.5 CLEANROOM - OPERATION THEATER, BIOSAFETY LAB, GMP LAB & CLEANROOM

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WHAT WE ARE OFFER?

- **Consultation, design & build the Critical Environment Facility.**
- **Supply and Install Equipment for Laboratory, Operation Theatre & Cleanroom.**
- **Testing and Balancing the System.**
- **Certification of NEBB / ICS.**

OVERVIEW

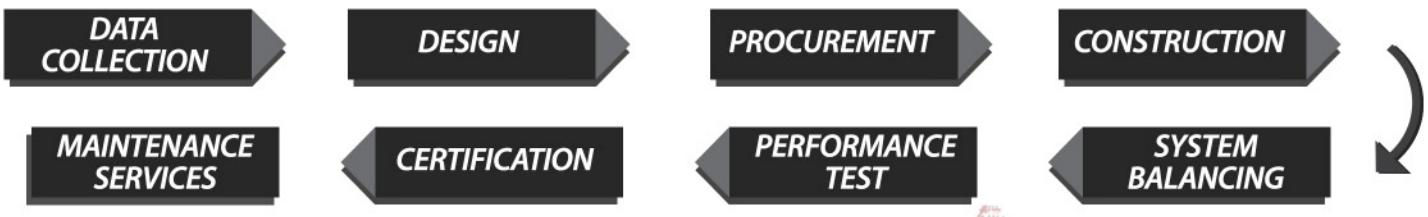
A 'clean room' or a 'clean space' is defined as a room, a suite of rooms or an area within a controlled environment. The concentration of airborne particles in these areas is strictly controlled. Other factors may also be controlled within the limits of this space.

Clean spaces are used in manufacturing, packaging, laboratories and research. They are most often seen in the pharmaceutical, biotechnology, semiconductor, microelectronics and aerospace industries. Hospital theatres have a similar 'clean space', however here there is a need to control particular types of contamination, rather than the quantities of particles present.

We provides comprehensive Design & Built for Operation Theatre, Biosafety Lab, GMP Lab and Cleanroom which includes all the following :

1. Bio Cleanroom including Operation Theatre and Biohazard Rooms
2. Laboratories
3. Negative and Positive Pressure Isolation Rooms
4. Pharmaceutical Cleanrooms

THE **DESIGN & BUILD** FLOW CHARTS



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OUR CRITICAL ENVIRONMENT TESTING EQUIPMENTS

- ELECTRONIC BALANCING TOOLS WITH AIR FLOW PRO HOOD
- VELOMETER
- KISTOCK DATA LOGGER
- MINNEAPOLIS DOOR BLOWER
- INFRARED THERMOMETER
- AIR SAMPLING SYSTEM
- MINI INCUBATOR
- PARTICLE COUNTER
- TACHOMETER

CRITICAL ENVIRONMENT BUILT WILL BE MADE TO COMPLY TO THE FOLLOWING STANDARDS

- BS EN ISO 14644-1
- FEDERAL STANDARD 209E
- BS 5295
- EC GMP ANNEX 1
- Limits of microbiological contaiment in clean areas
- PIC/S GMP for Medical Product

PROFESSIONAL MEMBERSHIP OF

- ASHRAE
- ASHRAE TC 9.11 Clean Spaces
- ASHRAE TC 9.6 Healthcare
- BIOMEDICAL ENGINEERING
- ASSOCIATION MALAYSIA (BEAM)
- Irish Cleanroom Society (ICS)
- International Society for Pharmaceutical Engineering (ISPE)
- Institute of Environmental Sciences and Technology (IEST)

CRITICAL ENVIRONMENT

COMMON REQUIREMENTS

Particle & Room Cleanliness
Room Pressurization
Airflow Velocity & Volume
Temperature
Humidity

CONTROL PARAMETERS

SPECIAL & UNIQUE REQUIREMENT

Microbial Contamination
Electrostatic Discharge (ESD)
Gaseous Contamination
Room Air Recovery
Particle Fallout
Lighting Level and Uniformity
Sound Level
Conductivity
Electromagnetic Interference (EMI)
Air Change Rate (ACH)

OUR COLLABORATION

- Tek-Air, Inc (USA)
- Engsysco, Inc

Tek-Air

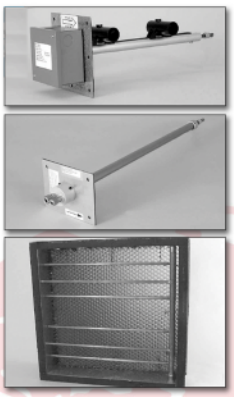
Engsysco

12.5 CLEANROOM - OPERATION THEATER, BIOSAFETY LAB, GMP LAB & CLEANROOM

FUME HOOD VENTILATION CONTROL SYSTEM

Tek-Air offers the widest variety of fume hood ventilation control for today's demanding laboratory requirements. Applications using face velocity control, measuring airflow through fume hood opening or sash position control are available. Sash position control is standard for vertical, horizontal or combination sash fume hoods. Tek-Air's FVC Fume Hood Ventilation Control Systems all use our patented VorTekTM airflow sensor to guarantee the best in operator safety.

AIRFLOW MEASUREMENT DEVICES

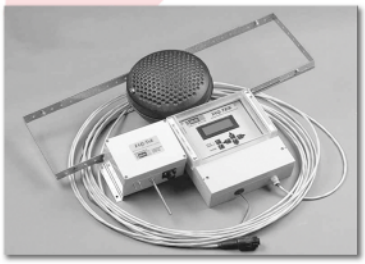


Tek-Air continues the theme of "Good, Better, Best" in our airflow measure options. Static pressure measuring probes, differential traverse probes, and our patented line of digital VortekTM shedding probes are available in various materials of construction; as fan inlet probes, duct insertion probes or factory installed duct measurement flow stations. Measuring actual airflow is the best means of assuring personnel safety.

SPACE PRESSURE MONITORING SYSTEM

Assures critical space pressure measurement for cleanrooms, isolation rooms, laboratories and hospitals.
- Capable of measuring ultra-low pressures as low as 0.0001" wc.
- Configurable to meet a wide variety of application requirements.
- Provides digital communication with Building Automation Systems.
- N2 communications capable.

OUTDOOR AIR VOLUME MEASUREMENT SYSTEM



Complete System for Measuring Outdoor Air Intake Volume and Temperature Over a Wide Range of conditions
- Designed to mount in confined space be tween O.A louver and O.A modulating damper
- Simple installation in a wide variety of intake configurations.
- Retrofit or new installations.
- Operates over -40 to +120 °F.
- Simplified commissioning with built-in Set-up Wizards.

ACCUTROL LLC

Tek Air of USA :
Critical Airflow Solution

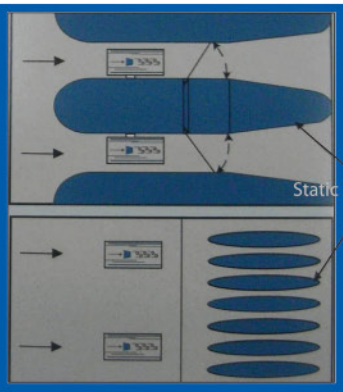
12.5 CLEANROOM - OPERATION THEATER, BIOSAFETY LAB, GMP LAB & CLEANROOM

ACCUTROL LLC

ACCUVALVE®

- True Flow Feedback
- High Accuracy and Turndown
- Linear Response
- Quiet
- No Scheduled Maintenance
- Electric Actuation
- Fast Speed of Response
- No Straight Run Requirements
- Low Pressure Drop

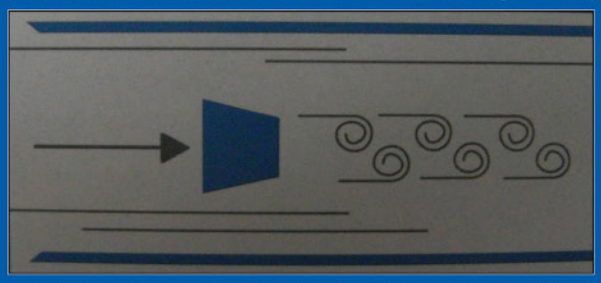
CRITICAL VENTILATION CONTROL VALVES



The AccuValve is designed to handle Critical Ventilation requirements of Accurancy, Speed and Durability. It modulates the air flow in a linear fashion, and the volume of the air flow with VorTek air flow sensors. The combined use of the VorTek sensors, along with a Valve designed for low pressure drop and linear control, make these valves the best available in the market for your critical ventilation requirement in the laboratory, clean room, or animal care facility.

VORTEX METER & VORTEX SHEDDING

A Unique, Patented Approach For All Critical Environment That Yields The Most Reliable Ventilation Airflow Management System



The principle of physics known as vortex sheeding is the basis for Tek Air's patented digital approach to airflow measurement. When an obstacle, such as the trapezoidal shedder in a VorTex probe, is placed in the path of the airflow, spiraling eddy currents are created. These vortices, in accordance with the laws of physics, are shed in alternating fashion from one side of the shedder to the other. Tek Air measures the rates at which these vortices are produced, converting alternating pulses into digital signals for the precise measurement of airflow volume.

Performance Benefits of Vortex Airflow Measurement

* No compensation is required for temperature, density and humidity changes
* Linear primary signal
* True velocity averaging from multiple sensors
* Accurancy not affected by dust/dirt
* Doesn't required recalibration
* Lower cost of ownership
* Primary signal is directly proportional to velocity